



A Study On Accidents And Causalities

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Abstract: Road accident is a global tragedy with ever raising trend. In India, it represents a major public problem because of the high number of victims involved and also the seriousness of the consequence for the victim themselves and the family. This increase road accident is closely linked with the rapid growth of population, economic development, industrialization and motorization encountered by the country. It continues to be a growing concern to all those who use the roads. This paper deals with a study on accidents and causalities.

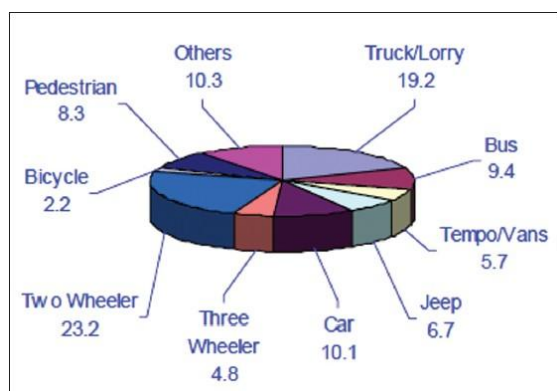
Key words: Road Accident; Population; Growing Concern; Causalities

I. INTRODUCTION

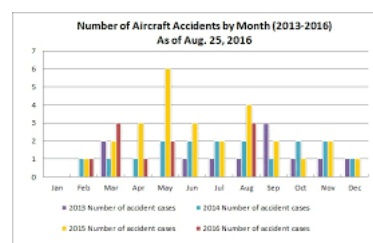
What is an accident? What are its causalities? Let us start this adjourn by knowing the brief introduction about the definition and meaning of the key terms. Accident is a synonym for unintentional injury, which is unplanned, incidental, impulsive and incidental situation that could have been prevented which has circumstances leading up to the accident been observed and recognized, and acted upon prior to the event. Further accidents can be classified as physical or non-physical, by activity, by vehicle. We notify about the accidents and its causalities pertaining to the road safety and measurements as our base cloud. Causalities regarding an accident implies that the main cause, its root, prevention, intervention and the result or the outcome of the particular accident. Let us now elaborate the term.

Road accident is head on Collision between vehicles, between a vehicle and an obstacle, between a vehicle and road parameters. The accident occurred could result in many injuries or damage to the property. There are various factors which come into account which can be the reason of accident that is design of the road, drivers' carelessness which can cause serious and most dangerous types of accidents.

This pie chart below shows the victim categories of road accidents and its percentage being mentioned below.



The graph below this shows us the statistical analysis of density of accidents from the year 2013-2016.



Defining the problem

The provision of highways is resulting in convenience for the people but the main problem which is faced by the government of India is that the more frequent road accidents which are happening on the highways which results in severe damage in form of man power infrastructure, its mainly happening with cities having large road transport. The problem basically which is small to be handled very carefully by the government, they have taken many measures to stop these huge accidents. Whenever a road accident takes place there are various types of damage which takes place which could be in the form of human beings who is also a victim, administration damages which occur during an accident. There is heavy cost to all these above types of damages which has to be paid during the accident which increases the complication. if the process goes on then there will be a huge loss for the Indian economy in order to pay the losses occurred.

Reason

The main reason behind the accidents which occur so frequently on the roads of India is that inattention which is given during the car. There would probably lesser amount of accidents if proper attention is given and rules are followed during travelling. There could be reason related to weather which also come into effect into the reason behind the accident which is of course a natural reason, the fog which causes less appearance on

coming vehicles could result in accidents. the other main reason which causes massive accident is consumption of alcohol during driving. Cause of accidents- there are four factors which are responsible for these types of road accidents which are

Equipment failure

the failure of some equipment inside the machine working of a vehicle resulting into serious accident due to the system failure. These could be brake failure, tire burst, thread separations, suspension mismatch, airbag retention and many more factors.

Roadway Design

The accidents which occur due to irregular design of roads are known as accidents due to Roadway Design. it could occur through hazardous visibility which consists of merging of lanes, livestock or pedestrian crossings, crests and troughs etc. the accident also occurs due to the irregular surface of the roads which causes imbalance of the vehicle ad results into Collision with another vehicle or infrastructure.

Poor Roadway Maintenance

Poor roadway maintenance also contributes to some of the car accidents. There could be debris in the way of the road which could create problems for the traveler which is responsibility of local highway department, faded road sign and pot holes could be another cause for the major road accident

Driver Behavior

The main foremost cause is driver's behavior other than three causes discussed above which constitutes only 5% of the cause of the road accidents and 95% depends on this one. Various surveys has been done in which there is a study which comes out to be that only 5% driver committed mistake the rest believe that the other driver would have done some mistake or to stop the accident to occur.

Safety engineering

This is subject in any discipline which shows and proves the amount of safety it can offer in any criteria. This subject is strongly related to systems engineering, industrial engineering and a subordinate as system safety engineering. It also acts as an aid in life critical system behaves as needed, even when the system fails.

Prevention

Once we identify the cause for the failure , we can add extra or subsequent or a redundant spare system. For example an additional braking system near the gear and provided it works only if there is a failure or emergency of the system in order to apply a break and stop the vehicle immediately.

Another example is having additional cooling system in order to provide systematic cooling for the engine. Hence efficiency ca be maintained too. Let us now separate it into 2 categories fault avoidance and fault tolerance. Fault avoidance techniques increase the reliability of individual items. Fault tolerance techniques increase the reliability to a whole new level.

Technical implements in preventing accidents

By introducing simple systems such as forward collision prevention and lane keeping assist, it can automatically take over the car ad its braking system, by controlling its steering and braking simultaneously as to get to know the accident is imminent. This can be cloned to a term called drivers assit. These system use a special cameras all around the vehicle and some stipulated sensors as well as software to detect and then to respond to potentially dangerous situations that driver may miss.

Co-Driving vehicles

This is a new concept which can be implemented into a particular vehicle, where the co-drive the vehicle notes down the drivers scheme of driving ,body language and variation pattern. Hence using an algorithm or anology the co-drive that is the microcontroller signals or beeps the driver if it finds there is some change or disturbance in the driving pattern and hence ensuring that the driver drives it safely. Implementing such systems helps to reduce accidents to a major cause.

Alcohol taboo

If the sensor finds out that if the driver has consumed alchol more than the permitted level, then the vehicle doesn't start and it sends a message to the nearest police station if its violated.

Mobile sniffer

During travelling if the driver uses the mobile phone for more than 30 seconds then there will be a warning voice message and a caution to the caller/receiver at the other end and if he/she continues to talk then the vehicle slows down and stops. Or the connectivity is disrupted and the mobile will be forbidden from receiving calls.

The blue box

If there is an accident, the accident is recognized by the bluebox unlike blackbox in airplanes these bluebox consists a vibrating sensor which senses the severity of the accident and using the gsm module it informs the nearest police station and ambulance for their immediate actions to take place. Hence the life is saved and other feature of bluebox is it stores the impulse, severity and the cause of accident with the communication of other sensors and hence it acts a storage device and a

mediator with precautionary and helping measure. But one drawback of this box is its quite expensive in installation.

Guardian

If the vehicle is found to be stolen or there is some system malware, then the user can identify the location where the vehicle is stopped and it comes with a feature to lock the fuel tank when the fuel is low, so the vehicle remains stopped and the particular user is required for activating it. This can be done using gsm module of center locking.

II. CONCLUSION

Road accident is a global tragedy with ever raising trend. In India, it represents a major public problem because of the high number of victims involved and also the seriousness of the consequence for the victim themselves and the family. This increase road accident is closely linked with the rapid growth of population, economic development, industrialization and motorization encountered by the country. It continues to be a growing concern to all those who use the roads.

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